Structural Isomorphisms Between Ramanujan's Mathematics and Relational Ontology

Mock Theta Functions, Mutual Specification, and Integration Thresholds

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Analytical framework developed with the assistance of Claude (Anthropic)

Based on: "The Self-Experiencing Universe: A Manifesto for an Emergent Reality" (Lis, 2025)

Abstract

This paper investigates deep structural resonances between Srinivasa Ramanujan's mathematical discoveries — particularly his work on mock theta functions, partition congruences, Rogers-Ramanujan identities, and infinite series summation — and the mechanisms of a relational ontological framework described in The Self-Experiencing Universe: A Manifesto for an Emergent Reality (Lis, 2025). The investigation does not seek verbal or metaphorical analogies, but genuine structural isomorphisms: places where mathematical and ontological structures describe the same deeper mechanism in different languages. Eight isomorphisms are identified and evaluated, with each explicitly marked according to evidential strength: STRONG structural isomorphism, MODERATE structural similarity, or SPECULATIVE analogy.

The most robust correspondences are: (1) mock theta functions as mathematical models of Proto-Phenomenal Capacity at the boundary of Integration Thresholds; (2) Rogers-Ramanujan identities as precise instantiations of Mutual Specification; (3) Ramanujan's partition congruences as models of discontinuous Qualitative Reconfiguration at thresholds; and (4) Ramanujan summation as a methodological isomorph of how pre-categorical Relational Potential must be accessed through structural, not naive-accumulative, modes of thinking.

This revised edition removes an earlier isomorphism connecting the q-parameter to a concept (Propensity) absent from the main source text, and replaces it with an isomorphism connecting the q-parameter's structural asymmetry to Systemic Telos/Immanent Directionality as described in Chapter 7.6. Additionally, two tensions flagged in the prior analysis are resolved on the basis of a closer reading of the source text.

Methodology and Epistemic Standards

The search for isomorphisms follows a strict criterion: not "does this sound similar?" but "do these structures share the same logical mechanism?" The distinction matters because mathematics is full of superficially similar-sounding things that are structurally unrelated. Conversely, structures that look completely different at the surface level may turn out to be expressions of the same deeper pattern.

Three evidential levels are used throughout:

> [STRONG] — Structural isomorphism: the mathematical mechanism and the ontological mechanism are the same process described in different languages.
>
> [MODERATE] — Significant structural similarity, but incomplete or asymmetric isomorphism.
>
> [SPECULATIVE] — Suggestive analogy that requires epistemic caution.

No claim is made that Ramanujan's mathematics proves the relational ontology, or that the ontology explains Ramanujan's mathematics. The claim is more modest and more precise: that the same structural patterns appear in both domains, suggesting these patterns may be fundamental features of how reality organizes itself — detectable from multiple independent starting points.

The Relational Ontological Framework: Core Mechanisms

The framework developed in The Self-Experiencing Universe proposes that reality is not built from things (substances, particles, objects) but consists of generative dynamics emerging from a single principle called Relational Potential (RP) — a pre-categorical capacity for differentiation and mutual specification. This is not a substance, not a 'ground' in the traditional metaphysical sense. It is the condition of possibility for any determinate thing to arise.

The framework's key mechanisms, which will be matched against Ramanujan's structures, are:

> Relational Potential (RP): Pre-categorical capacity for differentiation and mutual specification. Not a thing; the enabling condition for anything. (Chapter 6.1)
>
> Pattern Stabilization: The process by which determinate relational configurations crystallize from indeterminate potential. (Chapter 6.3)
>
> Mutual Specification: Patterns that constitute each other relationally — neither exists independently, their properties are relational facts of the configuration, not immanent attributes. (Chapter 5.3)
>
> Integration Threshold: The critical level of relational integration at which a qualitatively new regime becomes possible. The framework specifies three structural gates: stability, integration, and recursion (Chapter 6.6).
>
> Qualitative Reconfiguration: Phase transition to a categorically different mode — not gradual change but discontinuous threshold-crossing. (Chapter 6.4)
>
> Proto-Phenomenal Capacity: Configurations at the approach to the Integration Threshold — possessing its signature but not yet crossing into the new regime. (Chapter 6.6, Section I)
>
> Recursive Pattern: A pattern that folds back on itself, achieving self-reference and thereby enabling a localized perspective. (Chapter 6.6, Section III)
>
> Integrated Perspective: Consciousness — the intrinsic first-person character of a sufficiently integrated, self-referential relational pattern. (Chapter 7.4)
>
> Systemic Telos / Immanent Directionality: The intrinsic drive within RP toward greater complex, coherent, and stable self-relation — not teleological in the intentional sense, but the natural directionality of self-organizing relational processes. (Chapter 7.6). This operates exclusively within our Pattern Stabilization.

Scope note: All descriptions of Systemic Telos, Immanent Directionality, and experiential structures in this analysis refer only to the specific Pattern Stabilization we inhabit. Per the Fifth Pillar (Categorical Disjunction, Chapter 6.5), other crystallizations cannot be described from within our ontological grammar. The framework is explicit: 'Nothing in this ontology implies that these structures must appear, recur, or generalize across other possible domains of Relational Potential.'

I. Mock Theta Functions ↔ Proto-Phenomenal Capacity + Integration Threshold

STRONG — Structural Isomorphism

The Mathematical Structure

In his final letter to G. H. Hardy (January 1920, weeks before his death), Ramanujan described what he called 'mock theta functions' — functions that behave almost like theta functions as |q| approaches 1 (the boundary of the unit disk), but are not theta functions. For 80 years, mathematicians could not determine exactly what mock theta functions are.

In his 2002 PhD thesis, Sander Zwegers provided the answer: each mock theta function is the holomorphic part of a harmonic Maass form — a more complete mathematical object. The mock theta function alone is 'almost' a modular form; it lacks a completion term (a period integral, non-holomorphic) that, when added, yields a full harmonic Maass form with complete modular symmetry.

The key structural features:

> Mock theta functions exist 'at the boundary' (the unit circle), not cleanly inside or outside.
>
> They possess the signature of a modular form without being one — they lack closure.
>
> Their 'missing part' (the non-holomorphic completion) belongs to a different analytic regime.
>
> Only by adding this completion does one obtain an object with full structure.
>
> Zwegers' theorem: each mock theta function has exactly ONE completion. The shadow is unique.

The Isomorphism

Proto-Phenomenal Capacity in the relational ontology describes configurations that have 'almost sufficient' integration to generate an Integrated Perspective, but do not yet do so. They are at the Integration Threshold — possessing its signature without having crossed into the new qualitative regime. They lack the completion that Qualitative Reconfiguration would provide.

The structural isomorphism is precise: mock theta function at the boundary of the unit circle is the mathematical model of Proto-Phenomenal Capacity at the approach to the Integration Threshold. Zwegers' completion — adding the non-holomorphic term that yields the full harmonic Maass form — is the mathematical analogue of crossing the Integration Threshold.

On uniqueness: Zwegers proves each mock theta function has exactly one completion. The framework (Chapter 6.6) is structurally consistent with this: crossing the threshold constitutes a specific Integrated Perspective determined by the organizational form of that configuration — stability + integration + recursion for that specific pattern yields that specific Integrated Perspective. Crossing is constitutive, not additive. The configuration does not 'gain' consciousness from a menu of options; it becomes a perspective. The isomorphism holds on uniqueness as well as on structure.

Bringmann, Ono, and Zagier (2000s–2010s) subsequently showed that mock theta functions appear in calculations of black hole entropy, suggesting that the mathematical mechanism of 'boundary between qualitative regimes' is fundamental to physical reality's structure.

II. Rogers-Ramanujan Identities ↔ Mutual Specification

STRONG — Structural Isomorphism

The Mathematical Structure

The first Rogers-Ramanujan identity states:

$$\sum_{n=0}^{\infty} q^{n^2} / (q;q)_n \;=\; \prod_{n=1}^{\infty} 1/((1-q^{5n-1})(1-q^{5n-4}))$$

Left side: counts partitions of integers in which differences between consecutive parts are at least 2. Right side: counts partitions into parts of the form 5n±1. These are two completely different combinatorial problems. They give identical results. Neither side causes the other. Neither is 'more fundamental.' Both are expressions of the same deeper structure.

The same identities appear independently in combinatorics, statistical mechanics (Baxter's Hard Hexagon model, 1980), and conformal field theory (CFT at central charge c=2/5) — three domains with no obvious connection.

The Isomorphism

The relational ontology's Mutual Specification describes patterns that constitute each other — neither exists independently, their properties are relational facts of the configuration. There is no 'first' and 'second' element; both sides are expressions of a single relational act described from different vantages.

The Rogers-Ramanujan identities are a precise mathematical instantiation of this mechanism: two entirely different representations (summation form and product form) mutually specify each other. Neither is foundational. Both emerge as expressions of one relational identity at a deeper level (the c=2/5 CFT structure).

Multi-domain convergence is exactly what the relational ontology predicts: structures emerge in different 'languages' because they describe the same relational mechanisms, not because one domain borrows from another.

III. Ramanujan Summation / Analytic Continuation ↔ Accessing Relational Potential

STRONG — Methodological Isomorphism

The Mathematical Structure

The notorious result 1 + 2 + 3 + 4 + ... = −1/12 is not a paradox or error. In the context of analytic continuation of Riemann's zeta function ζ(s), the value ζ(−1) = −1/12 is the only self-consistent value the function can take at that point while preserving its analytic structure. Ramanujan developed his own summation method that assigns finite values to divergent series by examining the structural pattern of the whole rather than summing term-by-term.

Key structural feature: naive evaluation (add successive terms) gives ∞. But ∞ is not the correct answer — it is an artifact of applying the wrong category ('sum of terms') to an object that belongs to a different regime ('analytic structure of the whole pattern'). Ramanujan summation 'reads the pattern' instead of 'accumulating terms.'

The Isomorphism

The relational ontology repeatedly emphasizes: Relational Potential is not 'something' — every attempt to grasp it as a substance, cause, or entity generates infinite regress or categorical errors. Naive ontology ('what is RP?') produces the same kind of uncontrolled proliferation as naive summation.

Analytic continuation — returning to the source structure of the whole pattern rather than naive accumulation — is the mathematical isomorph of the ontological methodological postulate: RP is accessible only through a relational, structural mode of thinking, not through substantialization attempts. Ramanujan summation 'reads the pattern' rather than 'adding terms' — exactly as the relational ontology describes RP through its functional role in enabling Mutual Specification, not by asking 'what is it substantially?'

Epistemic note: This isomorphism is strong at the methodological level (the mode of accessing a pre-categorical structure) but should not be interpreted as 'RP = zeta function.' The isomorphism lies in the epistemic mechanism — how one accesses a pre-categorical object — not in the identity of the objects themselves.

IV. Partition Congruences ↔ Integration Thresholds + Qualitative Reconfiguration

STRONG — Structural Isomorphism

The Mathematical Structure

Ramanujan discovered the following congruences for the partition function p(n):

> $p(5n + 4) \equiv 0 \pmod 5$ for all n
> $p(7n + 5) \equiv 0 \pmod 7$ for all n
> $p(11n + 6) \equiv 0 \pmod{11}$ for all n

For example: p(4) = 5, p(9) = 30, p(14) = 135 — all divisible by 5, though the local combinatorics of partitions gives no indication of this. Key structural property: a global property (divisibility) emerges from local combinatorial accumulation (how you partition n), but cannot be read from any individual partition. The threshold is invisible at the local level.

The Isomorphism

This is a precise mathematical model of the relational ontology's mechanism: when relational integrations accumulate to a threshold, a qualitatively new property emerges (in the ontological case: Integrated Perspective) that was not predictable from individual local configurations. The property does not accumulate gradually — it appears discontinuously at the threshold.

The modular character of the congruences (mod 5, mod 7, mod 11) corresponds to the discontinuous, threshold nature of Qualitative Reconfiguration: there is no 'gradual approach' to being divisible by 5. Analogously, a configuration either crosses the Integration Threshold into Integrated Perspective or remains proto-phenomenal — there is no smooth gradient between qualitative regimes (Chapter 6.6: 'This is not gradual dawn. It is phase transition').

The Hardy-Ramanujan asymptotic formula demonstrates that a discrete, combinatorial quantity (the number of ways to partition n) has asymptotic behavior dominated by continuous, transcendental quantities (π, e). The transition between discrete and continuous regimes in this asymptotic is a mathematical analogue of Qualitative Reconfiguration: discrete local accumulation yields a continuous structure once sufficient scale is reached.

Note on periodicity: The partition model yields countably many threshold crossings (periodic: one for every n satisfying 5n+4). This is not in conflict with the framework's description of threshold crossing as constitutively unique for each crossing event. The mathematics models the structural type (which configurations satisfy the condition — many, periodically distributed); the ontology models what happens when a specific

configuration crosses (it constitutes exactly its Integrated Perspective). There are many possible threshold-satisfying configurations; each, when crossing, constitutes its own perspective.

V. Hardy-Ramanujan-Rademacher Circle Method ↔ Recursive Pattern + Integrated Perspective

MODERATE — Structural Similarity

The Mathematical Structure

The circle method is a technique for extracting arithmetic information by integrating generating functions along a circle in the complex plane. The circle 'surrounds' the generating function from outside, and through this act of 'encirclement' extracts local arithmetic properties. Farey points (rational points on the circle) represent local 'perspectives' — each fractional position p/q contributes its local weight to the global integral. The sum of these local perspectives reconstructs the global object (p(n)).

The Isomorphism

Integrated Perspective in the relational ontology emerges when a pattern 'folds back on itself' — achieves self-reference, a perspective from within. The circle method literally creates a loop (the contour of integration) around a structure, and through this loop 'extracts' properties that are invisible without the encirclement.

The structure of Farey arcs — where each rational point 'sees' a local portion of the structure, and the sum of perspectives reconstructs the whole — is isomorphic (at moderate strength) with Mutual Specification: localized perspectives whose contribution, summed across configurations, reconstitutes the relational field.

Asymmetry caveat: The circle method is a technique for extracting information, while Recursive Pattern is a mechanism for generating self-reference. The directions are reversed, though topologically analogous. This weakens the isomorphism from strong to moderate.

VI. Ramanujan Tau Function and Multiplicative Recursion ↔ Recursive Pattern

MODERATE — Structural Similarity

The Mathematical Structure

Ramanujan defined τ(n) through the discriminant modular form:

> $\Delta(z) = q \cdot \prod(n=1 \text{ to } \infty)(1-q^n)^{24} = \sum(n=1 \text{ to } \infty)\ \tau(n)q^n$

Ramanujan conjectured (proved by Deligne, 1974):

> $\tau(mn) = \tau(m)\tau(n)$ when gcd(m,n) = 1
> $\tau(p\text{^}(k+1)) = \tau(p)\cdot\tau(p\text{^}k) - p^{11}\cdot\tau(p\text{^}(k-1))$

The second relation is critical: the value at p^(k+1) is determined by its values at lower powers. The function remembers itself — its values at composite points are relational functions of its values at simpler points. This is self-reference through multiplicativity. Deligne's proof that τ(n) is connected to Frobenius traces on l-adic cohomology revealed that a deep geometric structure had emerged from what appeared to be purely arithmetic.

The Isomorphism

Recursive Pattern in the relational ontology is a pattern that folds on itself — whose successive 'levels' are relational functions of previous ones, creating self-reinforcing stability (Chapter 6.6, Gate Three). The multiplicative recursion of τ is a mathematical instance of this mechanism: each value is relationally determined by values at lower levels, creating a coherent, self-referential structure.

The fact that Deligne's proof required unexpectedly deep geometry (the Weil conjectures, étale cohomology) suggests that simple arithmetic recursion 'carries within itself' a deeper level of structure — which resonates with the ontological mechanism in which Pattern Stabilization contains levels that become accessible after threshold crossings.

VII. The q-Parameter and its Structural Asymmetry ↔ Systemic Telos / Immanent Directionality

MODERATE — Structural Similarity

Revision note: In the prior version of this analysis, the q-parameter's structural asymmetry was mapped to a concept called 'Propensity' — a supplement to the main source text. On re-examination, this concept does not appear in the primary source (The Self-Experiencing Universe). The isomorphism is reconstructed here on the basis of the mechanism that the main text does contain: Systemic Telos and Immanent Directionality (Chapter 7.6).

The Mathematical Structure

Ramanujan's entire mathematical universe of q-series is organized around the parameter $q = e^{(2\pi i\tau)}$, where τ is in the upper half-plane ($Im(\tau) > 0$). This forces $|q| < 1$. All q-series converge inside the unit circle and diverge outside. At $|q| \to 1$, structures become singular or reveal their deeper character (mock theta functions). The parameter q 'orients' the entire structure in a definite direction — toward the center of the circle, not outward. This is not a convention. It is a fundamental structural asymmetry: the system is defined over a domain with a built-in directional constraint.

The Isomorphism

Chapter 7.6 describes Immanent Directionality / Systemic Telos as 'the drive toward greater complex, coherent, and stable self-relation' — not an intention or external force, but an intrinsic structural feature of how Relational Potential organizes itself through Pattern Stabilization. This drive is what gives RP's self-organization a definite direction — toward greater coherence and integration, not toward equilibrium or stasis.

The q-parameter with condition $|q| < 1$ is a mathematical representation of such a built-in structural directionality — not an arbitrary convention, but a structural fact that organizes the entire mathematical world of q-series. The 'tilting' of q-series toward the interior of the unit circle (not outward, not toward dissolution) is isomorphic with the Systemic Telos of Relational Potential: organized toward coherent self-relation, not toward undifferentiated equilibrium.

Furthermore, the mock theta functions' behavior at $|q| \to 1$ — approaching the threshold where their deeper structure (harmonic Maass form completion) becomes visible — is structurally consistent with how Systemic Telos drives configurations toward Integration Thresholds: the 'direction' of q-series dynamics mirrors the direction of relational accumulation toward qualitative transition.

Important caveat: This isomorphism concerns the character of structural parameterization and directional dynamics, not specific mathematical content. It would

be wrong to conclude that RP = q. The isomorphism lies in the structural role each asymmetry plays within its respective system: q-asymmetry organizes q-series; Systemic Telos organizes Pattern Stabilization dynamics.

VIII. Rogers-Ramanujan Continued Fraction and Self-Similar Hierarchy ↔ Progressive Complexification

MODERATE — Structural Similarity

The Mathematical Structure

In the Lost Notebook, Ramanujan developed the Rogers-Ramanujan continued fraction:

$$R(q) = q^{1/5} / (1 + q / (1 + q^2 / (1 + q^3 / (1 + \ldots))))$$

This object has an infinite hierarchical structure: each level contains within itself the same structure at the next level of nesting. Ramanujan discovered remarkable identities for R(q), including that $R(e^{-2\pi})$ can be expressed in terms of √5, the golden ratio φ, and e. The golden ratio's appearance is not accidental: $\varphi = (1+\sqrt{5})/2$ is the fixed point of the self-similar recursion ($\varphi = 1 + 1/\varphi$).

The Isomorphism

Progressive Complexification in the relational ontology describes the emergence of increasingly nested levels of relational structure (Chapter 6.3.2), where each level builds on the previous with the same relational pattern but at a higher degree of integration. The hierarchical self-similarity of continued fractions — each nesting adds a level while preserving the relational pattern — is a mathematical model of this mechanism.

The golden ratio's emergence as the fixed point of self-similar recursion resonates with the ontological mechanism of patterns that stabilize through self-reinforcing feedback: φ is precisely the value at which the continued fraction structure achieves self-consistency, analogous to a configuration that has reached stable Pattern Stabilization through recursive self-reinforcement (Chapter 6.3.2).

IX. The Epistemic Character of Ramanujan's Intuition ↔ Novel Coherence

SPECULATIVE — Philosophical Analogy

This isomorphism is not with a specific mathematical structure of Ramanujan but with the epistemic character of his work as a whole, and is offered with appropriate caution.

Ramanujan did not derive — he intuited identities and wrote down results, frequently without proofs. Hardy repeatedly noted that he could not understand where Ramanujan 'got' his results. Many were not merely correct but prescient: mock theta functions (1920) described mathematical structures that the field would not understand until Zwegers (2002); his formulas appear unexpectedly in black hole entropy calculations; the Rogers-Ramanujan identities connect to conformal field theory that did not yet exist.

The relational ontology's concept of Novel Coherence describes how patterns, when sufficiently integrated, can achieve structural adequacy to levels of reality that are not yet accessible through sequential derivation. A highly integrated pattern may resonate with deeper structural levels before those levels become discursively explicit.

If this framework is correct, Ramanujan's epistemic situation — producing correct results that were structurally adequate to mathematical domains not yet discovered — is not anomalous. It is what the framework predicts: a sufficiently integrated mathematical perspective resonates with deeper relational structures directly, without requiring the stepwise explicit derivation that less integrated perspectives depend upon.

Epistemic caution: This is speculative. No claim is made that Ramanujan had 'access to Relational Potential' in any mystical sense. The claim is that the epistemic character of his work is structurally analogous to the mechanism of Novel Coherence. This analogy is philosophically significant but cannot be made structurally precise.

Synthesis: Four Structural Themes

Across all eight isomorphisms, four structural themes emerge:

1. Boundaries Are Where Qualities Emerge

Mock theta functions, partition congruences, behavior of q at |q|→1 — in all these cases the boundary (threshold, limit) is structurally the most interesting location, where something qualitatively new appears. The relational ontology predicts exactly this: Integration Thresholds are not 'points on a scale' but loci of Qualitative Reconfiguration. Ramanujan's mathematics is obsessively, repeatedly organized around boundary phenomena.

2. Mutual Specification Is a Fundamental Mechanism

Rogers-Ramanujan identities, the relationship between mock theta function and its harmonic Maass form completion, analytic continuation — in all cases, neither 'side' is fundamental. Both sides mutually specify each other through a deeper relational structure. The empirical catalogue (Formal Simulations document) yields 8 STRONG + 3 MODERATE instances of this mechanism across mathematics and physics.

3. Self-Reference Generates Perspective

The tau function's multiplicative recursion, the circle method's contour encirclement, continued fractions' nested self-similarity — structures that contain themselves or 'circle themselves' generate something inaccessible without that self-referential folding. This is the mathematical instantiation of Recursive Pattern → Integrated Perspective.

4. Pre-Categorical Objects Require Non-Naive Access

Ramanujan summation, analytic continuation — the correct value of pre-categorical mathematical objects is not obtained by naive accumulation but by returning to the structural pattern of the whole. This is methodologically isomorphic with the ontological postulate that Relational Potential is accessible only through structural, non-substantialist modes of thinking.

Honest Assessment of Limitations

The following limitations and caveats must be explicitly stated:

> No isomorphism constitutes proof. Ramanujan's mathematical structures could be isomorphic with many other ontological frameworks. The strength of resonances suggests structural adequacy — nothing more.
>
> Strongest isomorphisms: Mock theta functions ↔ Proto-Phenomenal Capacity, and Rogers-Ramanujan identities ↔ Mutual Specification. These are cases where the mechanisms are genuinely structurally identical.
>
> Monstrous Moonshine (the connection between the j-invariant of modular form theory and representations of the Monster group, Conway-Norton 1979, proved by Borcherds 1992) is not analyzed here but represents potentially the strongest available case of Mutual Specification in all of mathematics: two entirely disconnected mathematical domains turning out to be expressions of the same deeper structure (string theory on a specific orbifold). This deserves separate analysis.
>
> Selection problem: Ramanujan's mathematics was chosen because it showed prior resonance. This is confirmation, not blind testing. A methodologically honest test would select a domain without prior expectation of resonance and check whether isomorphisms emerge. This work has not yet been done.
>
> The most striking fact: Ramanujan repeatedly produced results 'from the future' — structurally adequate to mathematical and physical structures discovered decades after his death. If the relational ontology is correct, this is not anomalous. Whether or not one accepts the ontological framework, this epistemic pattern is independently remarkable.

References

Primary Ontological Sources

Lis, W. (2025). The Self-Experiencing Universe: A Manifesto for an Emergent Reality. First Edition. Poland: W.L. ISBN: 978-83-968651-8-2.

Key Mathematical Sources

Zwegers, S. (2002). Mock Theta Functions. PhD Thesis, Utrecht University.

Bringmann, K. & Ono, K. (2006). The f(q) mock theta function conjecture and partition ranks. Inventiones Mathematicae, 165(2), 243–266.

Ono, K. (2000). Distribution of the partition function modulo m. Annals of Mathematics, 151(1), 293–307.

Rogers, L. J. & Ramanujan, S. (1919). Proof of certain identities in combinatory analysis. Proceedings of the Cambridge Philosophical Society, 19, 211–216.

Deligne, P. (1974). La conjecture de Weil I. Publications Mathématiques de l'IHÉS, 43, 273–307.

Hardy, G. H. (1940). Ramanujan: Twelve Lectures on Subjects Suggested by His Life and Work. Cambridge University Press.

Andrews, G. E. (1998). The Theory of Partitions. Cambridge University Press.

Berndt, B. C. (1985–1998). Ramanujan's Notebooks, Parts I–V. Springer.

Dijkgraaf, R., Verlinde, E., & Verlinde, H. (1997). Counting dyons in N=4 string theory. Nuclear Physics B, 484(3), 543–561.

Borcherds, R. E. (1992). Monstrous moonshine and monstrous Lie superalgebras. Inventiones Mathematicae, 109(1), 405–444.

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